



# BEST AVAILABLE COPY

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## Claims:

### What is claimed is:

1. A rotatably reciprocating vane internal-combustion engine comprising a water jacketed, double-walled (optional) cylindrical casing (1) allowing for cooling fluids to pass through it; said casing equipped with longitudinally extending walls (2 & 3) unitary or affixed to the casing; vanes (7 & 8) unitary or affixed to shaft (6), said shaft rotatably alternating in a back and forth fashion and together with the vanes referred to as the swinging piston; said power output rotary shaft (6) is mounted within the casing upon double-walled (optional) end plates (10 & 11); sealing strips (9 & 12, optional) embodied in grooves and provided between the walls (2 & 3) and the shaft (6), between the vanes (7 & 8), the casing (1) and the end plates (10 & 11) respectively; four working chambers (a, b, c and d) formed between the vanes (7 & 8) and the walls (2 & 3) inside the casing change their volume in accordance with the alternating position of the vanes, each of the four chamber rooms experiencing an intake, a compression, an ignition-expanding and finally an exhaust cycle; four sets of ports (14 & 15) one set for each chamber, ports (14) for intake of combustible fluids and lubricating oil only and ports (15) for exhaust only, are conveniently located in the cylindrical casing (1) and, or at the end plates (10 & 11), depending upon the desired performance of the engine, having, (optional), generally known in the art, external valving means with an appropriate cam shaft; four ignition means (16, 17, 18 & 19), one for each chamber, ignite the compressed fuel mixture at maximum compression, firing sequentially into the appropriate chamber room at the end of the combustion stroke.

1           2. An internal-combustion engine according to claim 1, having means for  
2           imparting continuous rotation from the alternating "power output" shaft (6) to the main  
3           shaft (22) comprising a crank (19) secured to said shaft, a connecting rod (20) swivably  
4           mounted to said crank and to the uni-directionally rotating main shaft (22) through a slot  
5           on the flywheel (21), said rod pivots back and forth across the vertical line passing  
6           through the axis of the "power output" shaft (6) and the axis of the main shaft (22); said  
7           rod being extendable and adjustable in length at point (27); the lower part of said rod  
8           being rotatably and movably attached to the slot formed on the flywheel (21) and being  
9           fixed together with a fastening member via that slot to said flywheel in a predetermined  
10          position thus adjusting the length of the stroke of the swinging piston assembly for an  
11          optimum performance; said fastening member being comprised of a bolt and a nut  
12          coupled to the lower end of the rod and to the slot on the flywheel.

13          3. An internal combustion engine according to claim 1, wherein as an alternative  
14          embodiment the rigid longitudinal vanes (7 & 8) are replaced by articulating vanes (28,  
15          29, 30 & 31); the vane segments (29 & 30) in operation move as previously described;  
16          the articulated vane segments (28 & 31) form a different shaping of the chambers a, b, c  
17          and d; said vanes are suitably mounted for slidable rotation within slide-bearing means  
18          (32 & 33); said vanes nutate about the joints (34 & 35) while simultaneously sliding  
19          within the bearings (32 & 33); said bearings are rotatable within the casing while  
20          allowing vane segments (28 & 31) to slide therethrough.

21          4. An internal combustion engine according to claim 1, wherein the intake ports  
22          (14) are replaced with plurality of injection means, preferably located close to the  
23          spark plugs.